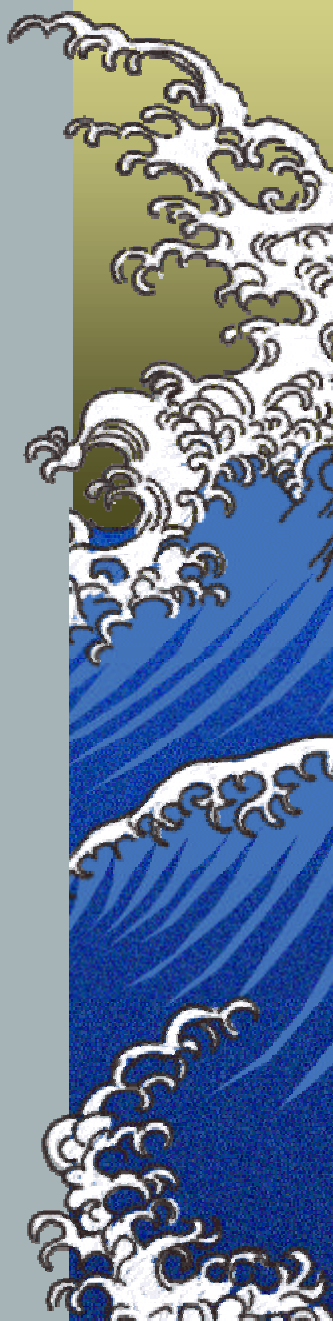
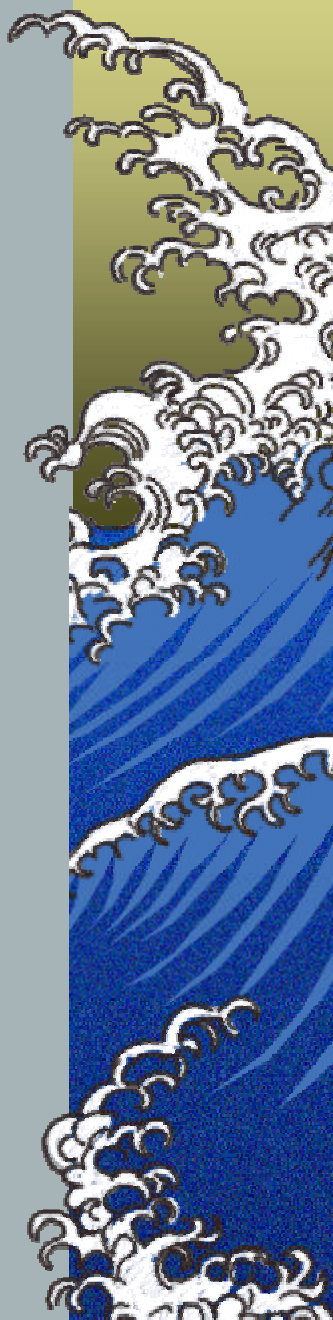
Risk Assessment - Nitrogen

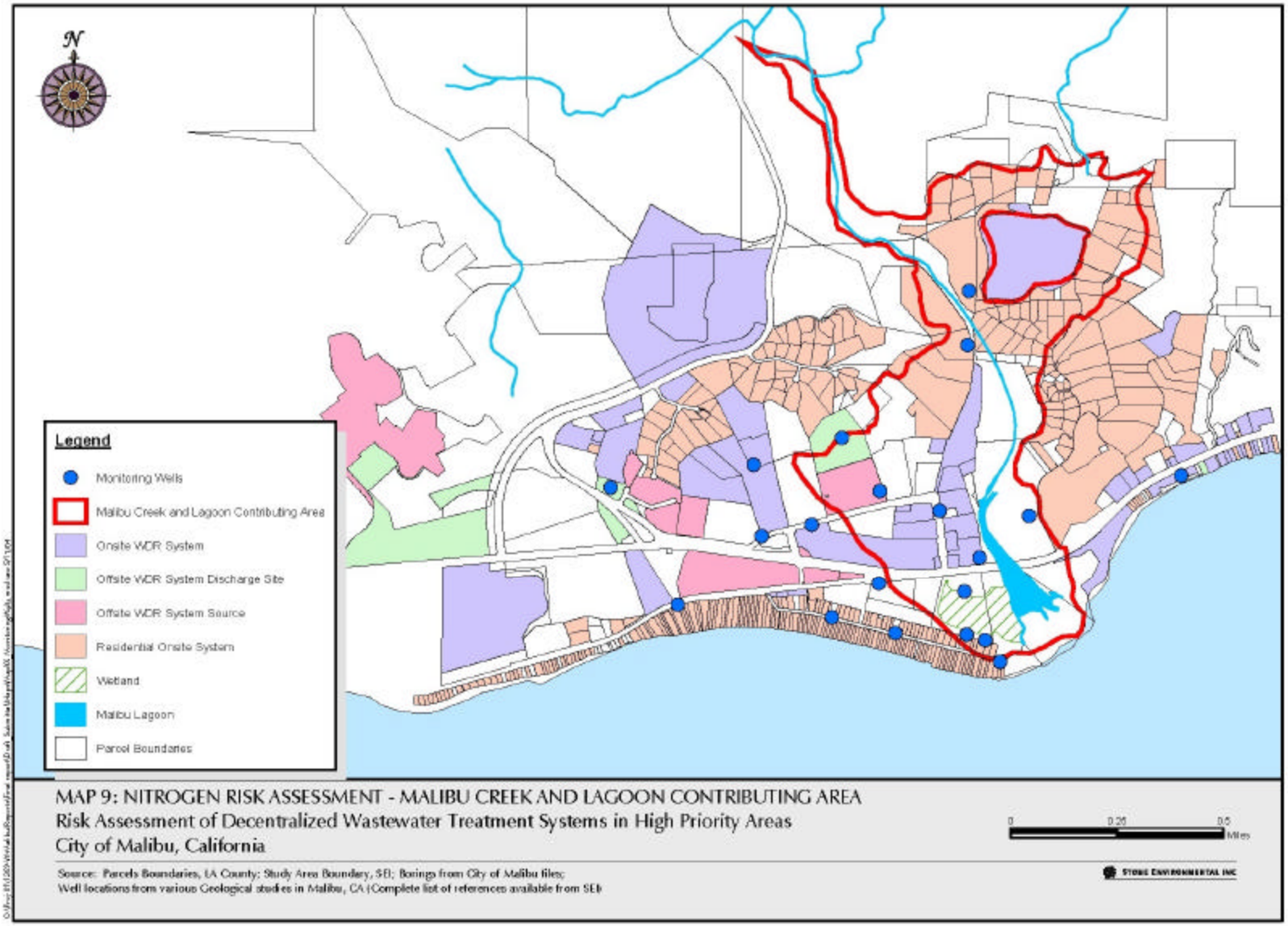
- *Total Maximum Daily Load (TMDL) is the driver*
- *Current Load: 10.69 lb N/day (USEPA, TMDL)*
- *Objective: USEPA TMDL*
  - *Winter Allocation: 8 mg/l Nitrogen from OWTS)*
  - *Summer Allocation: 93% reduction*
- *LARWQCB TMDL expected in Autumn, 2004*



Nitrogen Removal Processes

- *Nitrification*
  - *Ammonia to Nitrate*
- *Denitrification*
  - *Nitrate to Nitrogen gas*





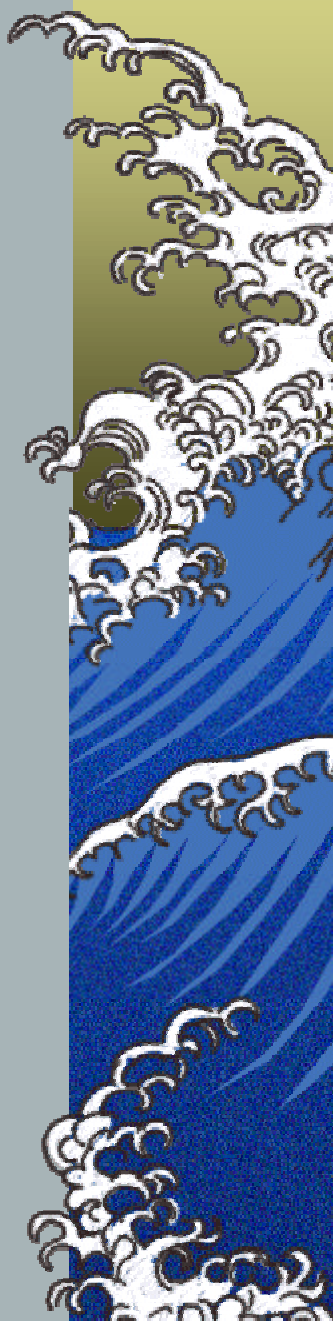
MAP 9: NITROGEN RISK ASSESSMENT - MALIBU CREEK AND LAGOON CONTRIBUTING AREA
Risk Assessment of Decentralized Wastewater Treatment Systems in High Priority Areas
City of Malibu, California

Source: Parcels Boundaries, LA County; Study Area Boundary, SEI; Borings from City of Malibu files;
Well locations from various Geological studies in Malibu, CA (Complete list of references available from SEI)

STONE ENVIRONMENTAL INC

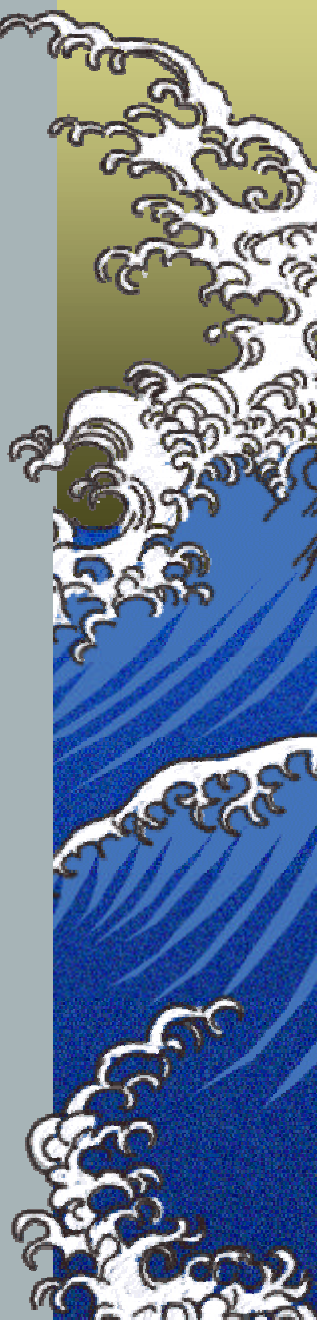
Nitrogen Removal Processes

- *Nitrification*
  - *Unsaturated flow*
- *Denitrification*
  - *Soil/Groundwater System*
  - *Advanced Treatment/ Denitrification*



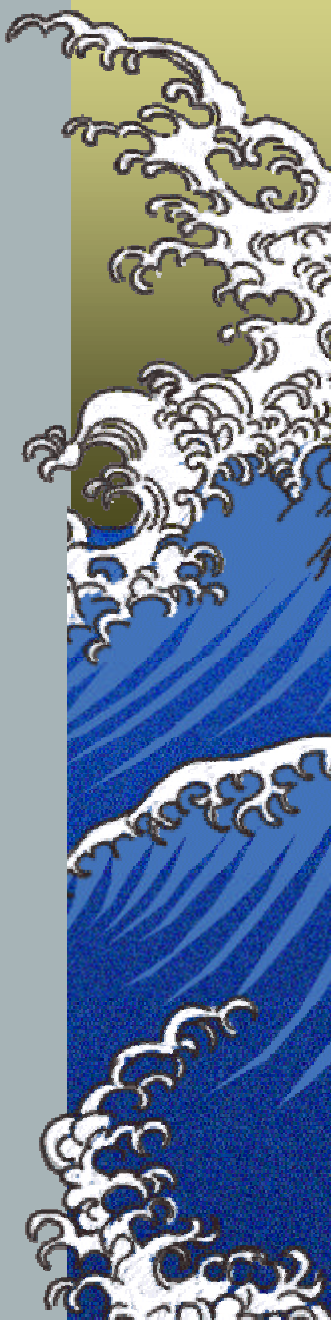
Current OWTS Program Elements to Achieve Nitrogen Outcomes

- *Utilize Groundwater Model as tool to evaluate TMDL objectives*
- *Renewable Operating Permits for Commercial/ Multifamily Occupancies*
- *Renewable Operating Permits for all Single family and Duplex Occupancies w/ Repair, Upgrade or New Construction*



Potential Alternatives to Achieve Nitrogen Outcomes (1 of 2)

- *OWTS Inspections at Point of Sale*
- *OWTS Contributing Area Inspections*
- *Require N Removal on OWTS Serving Commercial/ Multifamily Occupancies in Contributing Area*
- *Require N Removal OWTS Serving All Occupancies in Contributing Area*



Potential Alternatives to Achieve Nitrogen Outcomes (2 of 2)

- *Community Wastewater Reclamation with Onsite Dispersal*
- *Community Wastewater Reclamation with Dispersal Outside of Contributing Area*
- *Combination of above*